

We claim:

1. An optical switching apparatus that receives optical signals from a plurality of input circuits and outputs the optical signals to one of a plurality of output circuits comprising:

5 a plurality of input signal adjusting units for adjusting amplitude of the optical signals after being received at the plurality of the input circuits;

an optical signal switching unit having a plurality of input ports and a plurality of output ports, the plurality of the input ports being connected to said input signal adjusting units and receiving the optical signals after being adjusted in said input signal adjusting units, said optical signal switching unit transferring the optical signal from said input
10 ports to one of the plurality of said output ports;

a plurality of output signal monitoring units connected to said output ports for monitoring the optical signals at said output ports to generate feedback signals based on the optical signals at said output port; and

15 a controlling unit, connected to the plurality of said input signal adjusting units, said optical signal switching unit and said output signal monitoring units for selecting at least one of said input signal adjusting units and at least one of said output signal monitoring units based on a predetermined configuration of the optical switching unit and for controlling said selected one of said input signal control units based on the feedback
20 signals generated by the selected one of said output signal monitoring units.

2. The optical switching apparatus as claimed in claim 1, wherein said output signal monitoring units monitor an amplitude of the optical signals outputted from said optical switching unit to generate the feedback signals.

25 3. The optical switching apparatus as claimed in claim 1, wherein said output signal monitoring units monitor differential loss among different channels outputted from said optical switching unit to generate the feedback signals.

4. An optical switching apparatus that receives optical signals from a plurality of input circuits and outputs the optical signals to one of a plurality of output circuits, comprising:

a plurality of optical amplifiers for amplifying the optical signals;

5 an optical switch having a plurality of input ports and a plurality of output ports, said input ports being connected to said optical amplifiers, said optical switch transferring the optical signals received from said optical amplifiers to said output ports;

a plurality of monitor circuits for monitoring the optical signals at each of said output ports of said optical switch and generating feedback signal for said output ports;

10 and

a controller connected to the plurality of said optical amplifiers, said optical switch and said monitor circuits for selecting a particular one of said monitor circuits based on predetermined rules, and a particular one of said optical amplifiers based on the selected one of said monitor circuits and configuration of said optical switch, said

15 controller controlling said selected one of said optical amplifiers based on the feedback signals from the selected one of said monitor circuits.

5. The optical switching apparatus as claimed in claim 4, wherein said output signal monitoring units monitor an amplitude of the optical signals outputted from said optical switching unit to generate the feedback signals.

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6. The optical switching apparatus as claimed in claim 4, wherein said output signal monitoring units monitor differential loss among different channels outputted from said optical switching unit to generate the feedback signals

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7. An optical switching apparatus that receives optical signals from a plurality of input and outputs the optical signals to one of a plurality of output circuits, comprising:

an optical switch having a plurality of input ports and output ports,

a plurality of input signal adjusting units for adjusting state of the optical signals after being received at the input circuits,

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a plurality of output signal monitoring units for monitoring the state of the optical signals outputted to the output circuits, and

a control unit for controlling said optical switch, said input signal adjusting units and said output signal monitoring units;

5 wherein said input signal adjusting units are respectively connected to said input ports of said optical switch, and

 wherein said output signal monitoring units are respectively connected to said output ports of said optical switch, and

 wherein said control unit selects one of said output signal monitoring units to
10 obtain the state of the optical signals at said output port,

 wherein said control unit selects a particular one of said input signal adjusting units based on a predetermined configuration of said optical switch, and

 whereby the selected one of said input signal adjusting units adjusts the state of the optical signals.

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8 The optical switching apparatus as claimed in claim 7, wherein said output signal monitoring units monitor an amplitude of the optical signals outputted from said optical switching unit to generate the feedback signals.

20 9 The optical switching apparatus as claimed in claim 7, wherein said output signal monitoring units monitor differential loss among different channels outputted from said optical switching unit to generate the feedback signals

10 An optical switching apparatus that receives optical signals from a plurality of
25 input circuits and outputs the optical signals to one of a plurality of output circuits, comprising:

 an optical switch having a plurality of input ports and output ports,

 a plurality of optical amplifiers for amplifying the optical signals received by the
30 input circuits,

a plurality of monitor circuits for monitoring state of the optical signals to be outputted to the output circuits, and

a controller for controlling said optical switch, said optical amplifiers and said monitor circuits,

5 wherein said optical amplifiers are respectively connected to a corresponding one of said input ports of said optical switch, and the monitor circuits are respectively connected to a corresponding one of said output ports of said optical switch; and

 wherein said controller selects one of said monitor circuits to obtain the state of the optical signals at said output ports,

10 wherein said controller selects a particular one of said optical amplifiers based on a predetermined configuration of said optical switch to amplify the optical signals before the optical signals reach said input ports.

11. The optical switching apparatus as claimed in claim 10, wherein said output
15 signal monitoring units monitor an amplitude of the optical signals outputted from said optical switching unit to generate the feedback signals.

12. The optical switching apparatus as claimed in claim 10, wherein said output
20 signal monitoring units monitor differential loss among different channels outputted from said optical switching unit to generate the feedback signals